REMARKS

Claims 13 - 17 have been canceled by a prior amendment without prejudice or disclaimer of the subject matter thereof. Applicant reserves the right to pursue the subject matter of any of the canceled claims in the subject application and subsequently filed continuing applications.

Claims 1 - 5, 7 - 12, 18 - 19 and 26 have been amended.

Claims 1 - 12 and 18 - 28 are present in the subject application.

In the Office Action of April 28, 2008, the Examiner has rejected claims 1 - 2, 4 - 6, 18 - 19 and 21 - 23 under 35 U.S.C. §102(b), has rejected claims 3, 7 - 12, 20 and 24 - 28 under 35 U.S.C. §103(a). Favorable reconsideration of the subject application and allowance of all of the pending claims are respectfully requested in view of the following remarks.

The Examiner has rejected claims 1 - 2, 4 - 6, 18 - 19 and 21 - 23 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,430,570 (Judge et al.). In addition, the Examiner has rejected claims 7, 8, 11, 24 - 25 and 28 under 35 U.S.C. §103(a) as being unpatentable over the Judge et al. patent.

Briefly, the present invention embodiments are directed toward a system for managing memory. The system includes, among other things, a memory with logic and a processor configured with the logic to receive an indication of an application state from a plurality of applications in memory and determine which of the plurality of applications to effect removal from the memory based on the received indication. The application state contains information relating to whether a user experience with a corresponding application will be degraded if that application is unloaded from memory and reactivated. Applications with lesser impact on the

user experience are removed from memory prior to other applications (e.g., See Abstract; and Paragraphs 0025, 0052, 0059 and 0073).

In other words, the present invention embodiments provide a removal scheme based on whether an application, upon reactivation, returns to the same or similar operating point occurring prior to the application being unloaded from memory (e.g., provides no significant user perceivable differences of the application (before unloading and after reactivation)). Those applications that do return to the same or similar operating point after reactivation are removed from memory prior to the other applications.

The Examiner takes the position that the Judge et al. patent discloses the features within these claims.

This rejection is respectfully traversed. However, in order to expedite prosecution of the subject application, independent claims 1 and 18 have been amended and recite the features of: receiving an application state from each of a plurality of applications in memory, wherein each application state indicates the manifestation of user perceivable differences from a current operational state of a corresponding activated application upon the corresponding application being unloaded from the memory and reactivated; and determining which of the plurality of applications to effect removal from the memory based on the received application states, wherein an application with an application state indicating less of the user perceivable differences relative to the user perceivable differences indicated by application states of other applications in the memory is removed from the memory before the other applications.

The Judge et al. patent does not disclose, teach or suggest these features. Rather, the Judge et al. patent teaches an application manager for managing applications in an embedded device. The application manager allows remote control of loading, starting, stopping, unloading, and application state querying of applications on an embedded device. Applications are cached in an application cache resident within the embedded device even after application termination to allow for higher efficiency when applications must be unloaded to handle low or out-of memory conditions. The application manager may query application information including the application execution state (e.g., initialized, executing or terminated) (e.g., See Abstract; Column 4, lines 55 - 59; and Column 7, lines 12 - 18). The application manager frees memory according to a priority based algorithm or list. For example, an additional unload priority field may be utilized to indicate the ranking of an application for unloading (e.g., See Column 5, lines 7 - 15; Column 7, lines 39 - 45).

Thus, the Judge et al. patent teaches an application manager that frees memory according to a priority ranking for the applications (e.g., provided by the client). There is no disclosure, teaching or suggestion of removing applications based on the amount of user perceivable differences from a current operational state of a corresponding application upon unloading and reactivation of that application as recited in the independent claims. In other words, the Judge et al. patent discloses a client providing a rank or priority for unloading applications, whereas the independent claims recite a removal scheme based on whether an application, upon reactivation, returns to the same or similar operating point occurring prior to the application unload. Those

12

applications that do return to the same or similar operating point are removed from memory prior to the other applications.

Since the Judge et al. patent does not disclose, teach or suggest the features recited in independent claims 1 and 18 as discussed above, these independent claims are considered to be in condition for allowance.

Claims 2, 4 - 8, 11, 19, 21 - 25 and 28 depend, either directly or indirectly, from independent claims 1 or 18 and, therefore, include all the limitations of their parent claims. Claims 2, 4 - 5, 7 - 8, 11 and 19 have been amended for consistency with their amended parent claims. The dependent claims are considered to be in condition for allowance for substantially the same reasons discussed above in relation to their parent claims and for further limitations recited in the dependent claims.

The Examiner has rejected claims 3, 9, 10, 12, 20, 26 and 27 under 35 U.S.C. §103(a) as being unpatentable over the Judge et al. patent in view of Enterprise Java Beans Component Architecture: Designing and Coding Enterprise Applications (hereinafter referred to as the "EJB publication").

Briefly, the present invention embodiments are directed toward a system for managing memory as described above.

The Examiner takes the position with respect to independent claim 12 that the Judge et al. patent discloses the claimed invention, except for the various states (e.g., stateless, stateful with and without state records, etc.) and removal sequence. The Examiner further alleges that the EJB

publication discloses these features, and that it would have been obvious to combine the Judge et al. patent and EJB publication to attain the claimed invention.

This rejection is respectfully traversed. However, in order to expedite prosecution of the subject application, independent claim 12 has been amended and recites the features of: receiving an application state from each of a plurality of applications in memory, wherein each application state indicates the manifestation of user perceivable differences from a current operational state of a corresponding activated application upon the corresponding application being unloaded from the memory and reactivated; receiving at least one of a stateless state indicating no significant user perceivable differences, a stateful state with a state record indicating no significant user perceivable differences, and a stateful state with no state record indicating user perceivable differences; and determining that an application with a stateless state is removed before an application with a stateful state with a state record, and that an application with a stateful state with a state record is removed before an application with a stateful state with no state record.

As discussed above, the Judge et al. patent teaches an application manager that frees memory according to a priority ranking for the applications (e.g., provided by the client). Accordingly, there is no disclosure, teaching or suggestion of removing applications based on the amount of user perceivable differences from a current operational state of a corresponding application upon unloading and reactivation of that application as recited in the independent claim.

The EJB publication does not compensate for the deficiencies of the Judge et al. patent. Rather, the EJB publication teaches server-side components that encapsulate an application's business logic (e.g., See Section entitled "2.4 Enterprise JavaBeans"). These components

14

include session beans that represent an interactive session with one or more clients, and maintain state, but only during the time a client interacts with the bean (e.g., See Section entitled "Session Beans"). A stateless session bean does not maintain client-specific data, while a stateful session bean stores client specific-data which is not saved at client termination (e.g., See Sub-Sections entitled "Stateless Session Beans" and "Stateful Session Beans"). Accordingly, there is no disclosure, teaching or suggestion of a scheme for unloading applications from memory or, for that matter, removing applications from memory based on the amount of user perceivable differences from a current operational state of a corresponding application upon unloading and reactivation of that application as recited in the independent claim.

Since the Judge et al. patent and EJB publication do not disclose, teach or suggest, either alone or in combination, the features recited in independent claim 12, this claim is considered to be in condition for allowance.

Claims 3, 9 - 10, 20 and 26 - 27 depend, either directly or indirectly, from independent claims 1 or 18 and, therefore, include all the limitations of their parent claims. Claims 3, 9 - 10 and 26 have been amended for consistency with their amended parent claims. As discussed above, the combination of the Judge et al. patent and EJB publication does not disclose, teach or suggest removing applications based on the amount of user perceivable differences from a current operational state of a corresponding application upon unloading and reactivation of that application as recited in the claims. Accordingly, these claims are considered to be in condition for allowance.

In addition to the foregoing, there is no apparent reason to combine the Judge et al. patent and EJB publication. The Examiner takes the position that the EJB publication discloses stateless applications having better performance due to the fact that no data is stored back and forth to secondary memory, thereby freeing up resources that a stateful application would require if it were stored to and from secondary memory. The Examiner further asserts that since removing an application with a stateless state before an application with a stateful state would reduce latency in the system and provide better performance for the user, it would have been obvious to combine the Judge et al. patent and EJB publication.

However, the Examiner's rationale is misplaced. In particular, if better performing (stateless) applications are removed first as suggested by the Examiner, the lesser performing applications would remain. These lesser performing applications would clearly degrade overall system performance and increase system latency (due to the replacement of the better performing applications with the lesser performing applications). Accordingly, the proposed combination of the Judge et al. patent and EJB publication does not render the claimed invention obvious.

In view of the foregoing, Applicant respectfully requests the Examiner to find the application to be in condition for allowance with claims 1 - 12 and 18 - 28. However, if for any reason the Examiner feels that the application is not now in condition for allowance, the Examiner is respectfully requested to call the undersigned attorney to discuss any unresolved issues and to expedite the disposition of the application.

Applicant hereby petitions for any extension of time that may be necessary to maintain the pendency of this application. The Commissioner is hereby authorized to charge payment of

16

any additional fees required for the above-identified application or credit any overpayment to

Deposit Account No. 05-0460.

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